

EXHIBIT 1

Influence of Air on Heat Degradation

Specimen

EVOH

(Ethylene content:29 mol%,
Saponified degree:99.7 mol%,
MFR[210 °C 2160g]:3.4g/10 min)

Heating Condition

Atmosphere : N₂ , Air

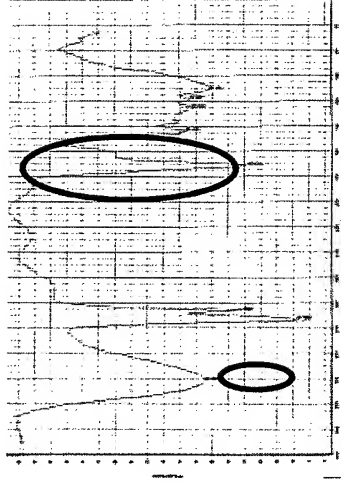
Temperature : 220, 240 °C

Period : Specified Hours

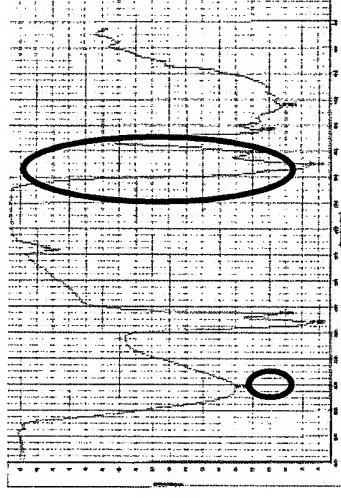
Influence of Air on Heat Degradation

Increasing IR Peak with 1710 cm^{-1} : Carbonyl Group

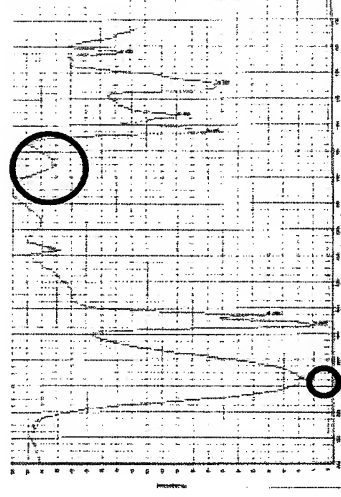
Decreasing IR Peak with 3300 cm^{-1} : Hydroxyl Group



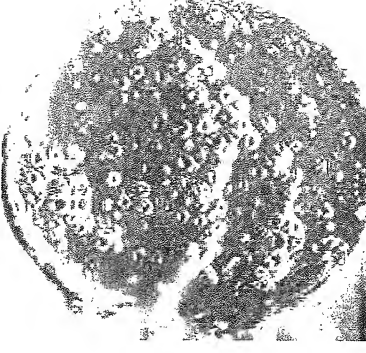
230 C / Air / 1hr



230 C / Air / 4hrs



230 C / N₂ / 4hrs



With heat and direct exposure to air, EVOH is easier to degrade.

Comparing EVOH vs Other Resins

Condition :

200 °C in Air

1hr

3hrs

5hrs

7hrs

EVOH(Ethylene 32 mol%)

PP(NOVATEC EA9)

Adhesive resin (ADMER QF551)

With heat and moisture, EVOH is very easier
to degrade than other resins.